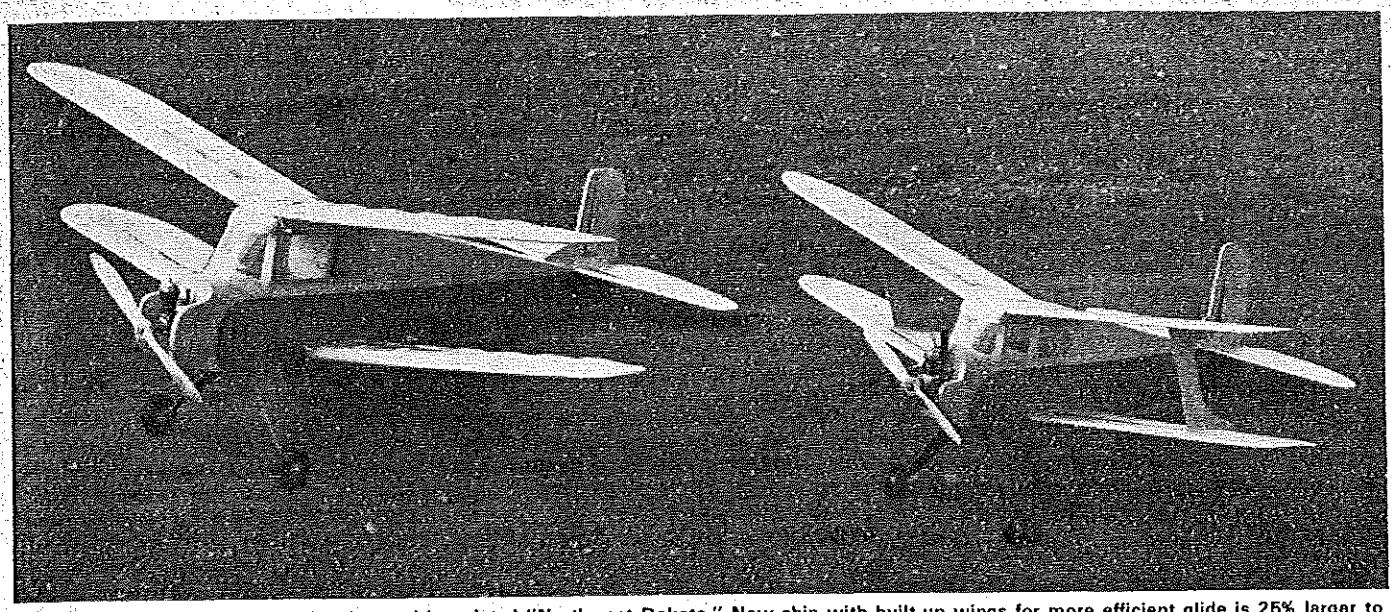
Clarence Haught

Northwest Dakota

Once kitted by Veco, then Dumas, the all-balsa Dakota was an extremely clever small field sport free flight model when powered by an 02 or 049. Our update is enlarged 25%, has built-up wings, and 049 power. Rest assured—it's a remarkable aircraft!

Model climbs at angle shown at instant of launch, in left-hand turns. Turn adjusted by increasing or decreasing built-in left thrust, climb by more or less down thrust. Insert: Reminiscent of Waco biplanes of the Thirties, Dakota's generous wing area allows heavier construction. Dihedral provides good stability. Though purposely heavy to avoid fly-aways, the Dakota should not be flown in areas of known strong thermal activity.



Comparison of original all-wood Dakota with updated "Northwest Dakota." New ship with built-up wings for more efficient glide is 25% larger to utilize power of modern 049's. Wings are rubber-banded on so they shift without damage in event of hard landings or striking obstructions.

EVEN IF you've only been into modeling for a short time you probably have a soft spot in your heart for that one special model or models. It may have been your first or your fiftieth model but some models just turn out to be special. Maybe it was the way it flew or perhaps it had a classical appearance. Whatever the case may be it lingers in the mind.

One such model is the Dakota. A cabin biplane, reminiscent of the old Waco cabins, the Dakota was designed for the Infant engines that emerged in the post World War II years. Construction was all balsa, with the exception of a few plywood parts, making for a rugged and durable model. Designed for sport flying, the little 24-inch span model would put in very acceptable flights on the relatively low powered engines of the day.

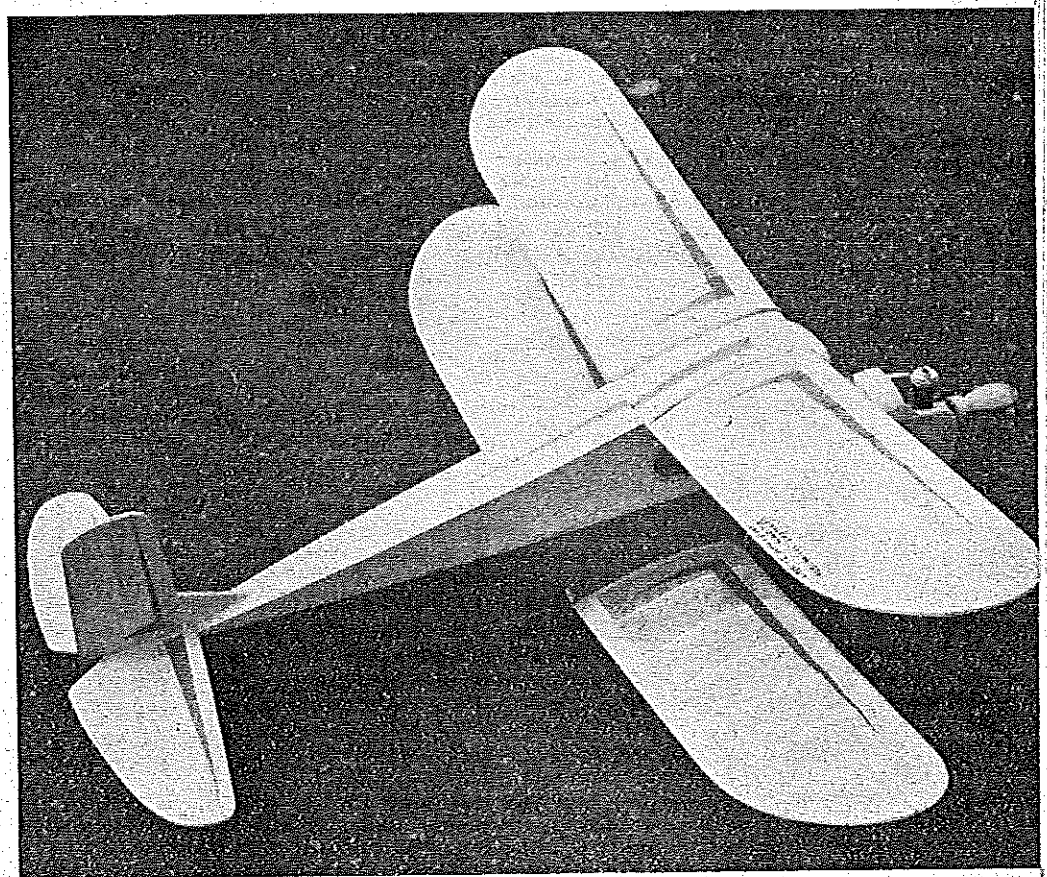
I recently acquired a kit for this old design which went together in a couple of evenings. But there have been some changes in powerplant design and the once adequate .049 has now become far too much power for the Dakota. The kit model was fitted with a Cox Pee Wee .020 which proved ample power.

In view of the abundance of Cox Baby Bee .049 and McCoy .049 engines, now retired from brief careers in plastic ready-to-fly control-line models, it seemed that a modernized version of the Dakota would fill a need for a sport free flight model for young and old alike.

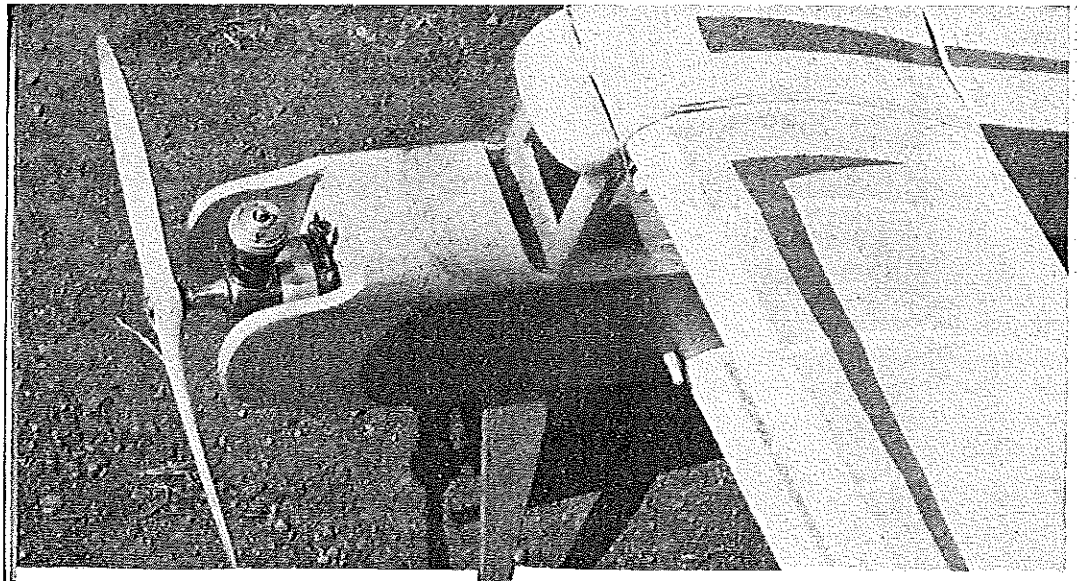
Scaling up the design 25% would result in a 30-inch wing span. Built-up wings attached with rubber bands would provide a better glide with less chance of damage than the rigidly attached sheet wings of the original. Such a model should be about right for the power output of the Baby Bee.

A few evenings later the new version was ready for testing. Hand gliding a model of this type reveals little other than pronounced stalling or diving tendencies. After a couple tosses to satisfy my curiosity the engine was started, tuned, and allowed to run out of fuel. A small amount of fuel measured in a syringe was placed in the tank and the engine restarted. The safest power pattern for a model of this type is to the left. The model was launched just to the left of the wind but it wanted to go to the right and the climb was too steep. Corrections were applied and the next short hop looked great. Since the field was large and the wind minimal, the next fuel allowance was rather generous. The ship climbed up quite high until the engine quit and began a gentle spiral down. Suddenly the wings began to rock and the nose perked up and the model began to ascend in strong lift. Five minutes later, from the edge of the field, the model, now just a speck in the sky, disappeared from view.

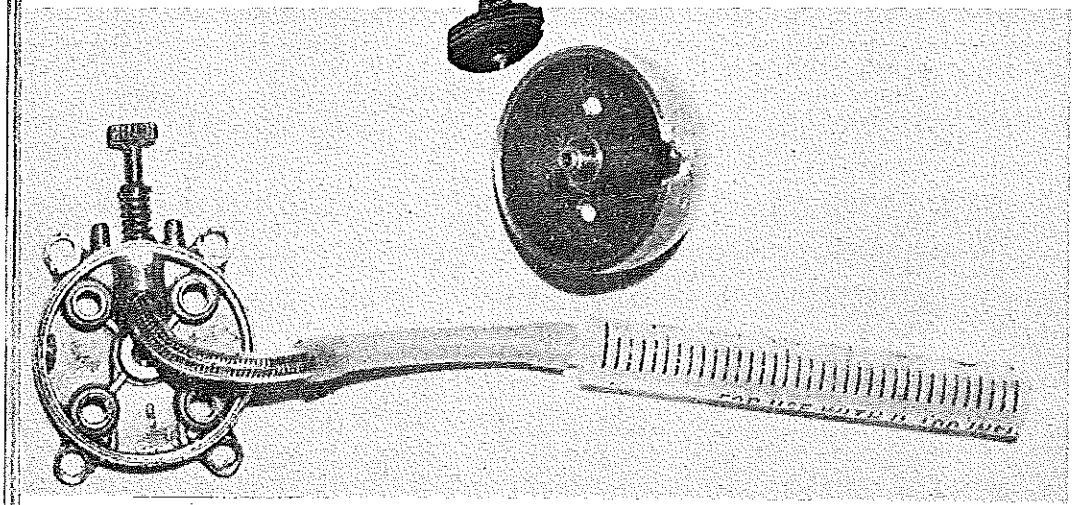
No dethermalizer had been incorporated in the design for three reasons. First, I wanted simplicity of operation as this design would appeal to young and inexperienced fliers, and when just getting into free flight, the novice doesn't need the has-



Name and address on wing may help model find its way home after fly-away—but care in controlling the engine run should avoid difficulty. The glide angle can be adjusted with nose or tail weight as required, though it is suggested you favor a bit of a fast glide.

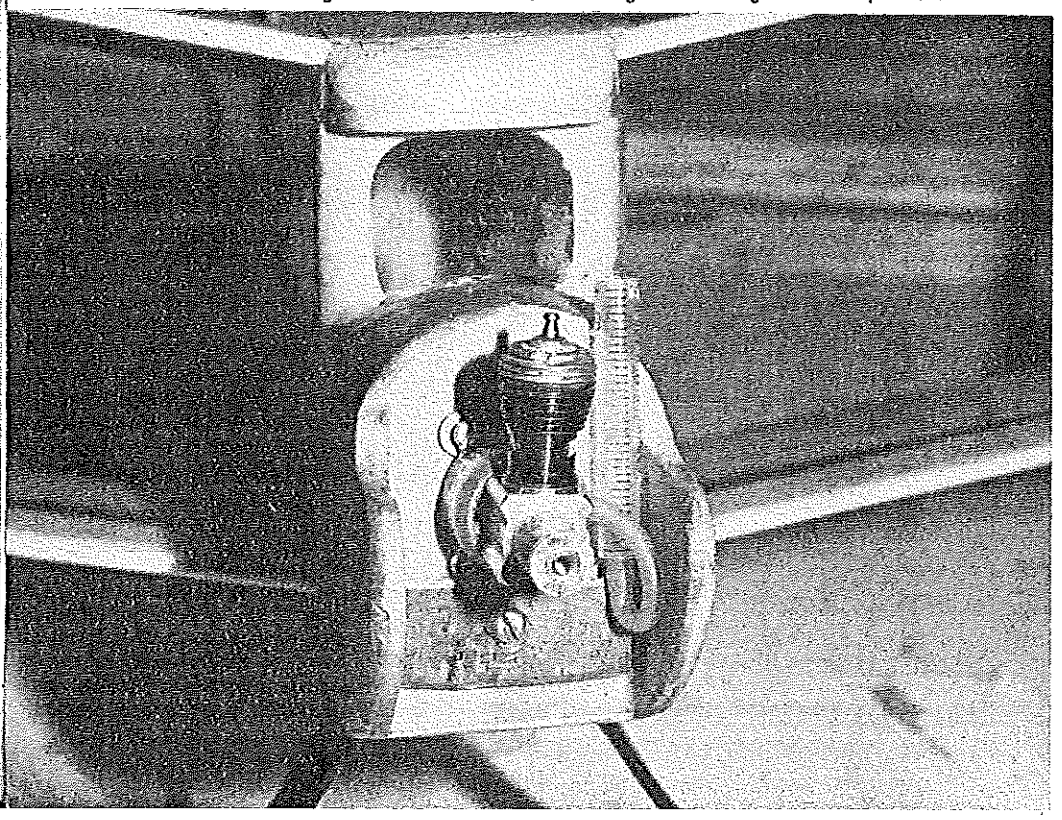


Close-up of the front end showing simple attachment of engine to firewall, the wing hold-on dowels for rubber bands and the fair ed landing gear strut. Sheet fuselage, tail group, are rugged.



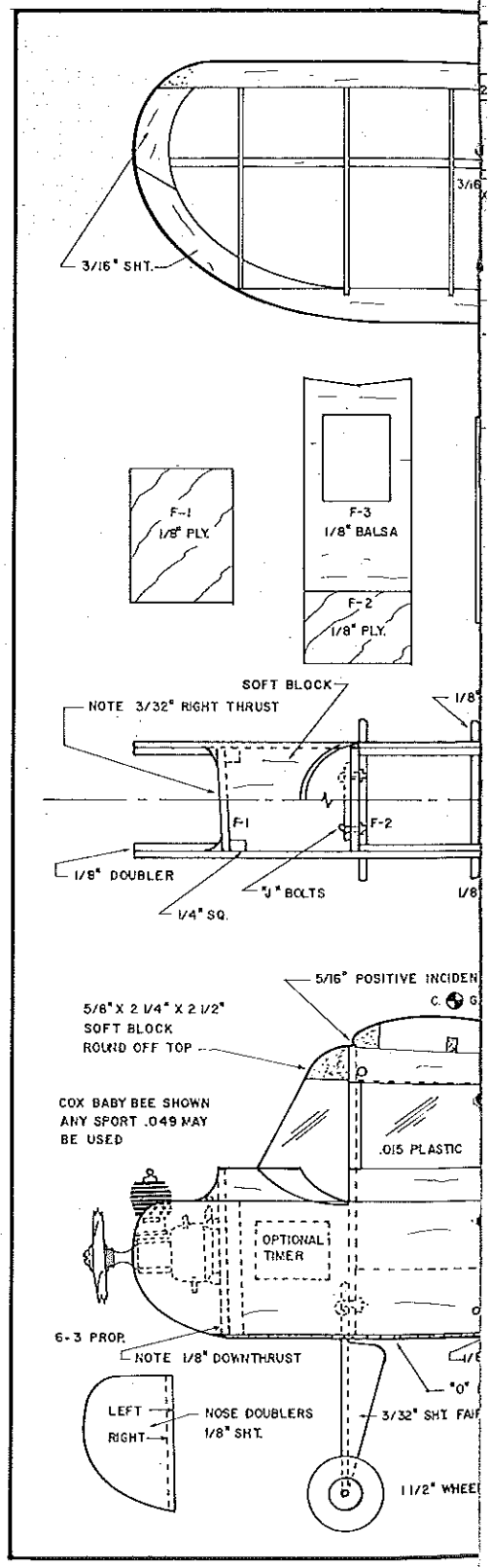
Modifications to adapt "eyedropper" tank to limit engine runs on Cox Baby Bee. Length of surgical fuel tubing links portion of plastic disposable hypo syringe to original fuel pick-up line. Engine tank is notched to clear fuel line. Run a bit rich if less thrust is desired.

Assembled engine fitted with eyedropper tank. In use, eyedropper is filled and engine started and tuned. Model is launched when fuel reaches desired mark. Fly with any length engine run you choose—but don't forget to check! Of course, this timing method not good for competition.



sle of fuse lighting before launch. Secondly, pop-up tails require accurate keying to prevent misalignment with resultant trim changes from flight to flight. Thirdly, fuses, even when used in a proper snuffer tube, tend to be fire hazards, and many flying site owners don't understand model airplanes anyhow and are horrified to see burning material projecting from the model.

So the model just flew away. Upon my arrival at home some two hours later, I



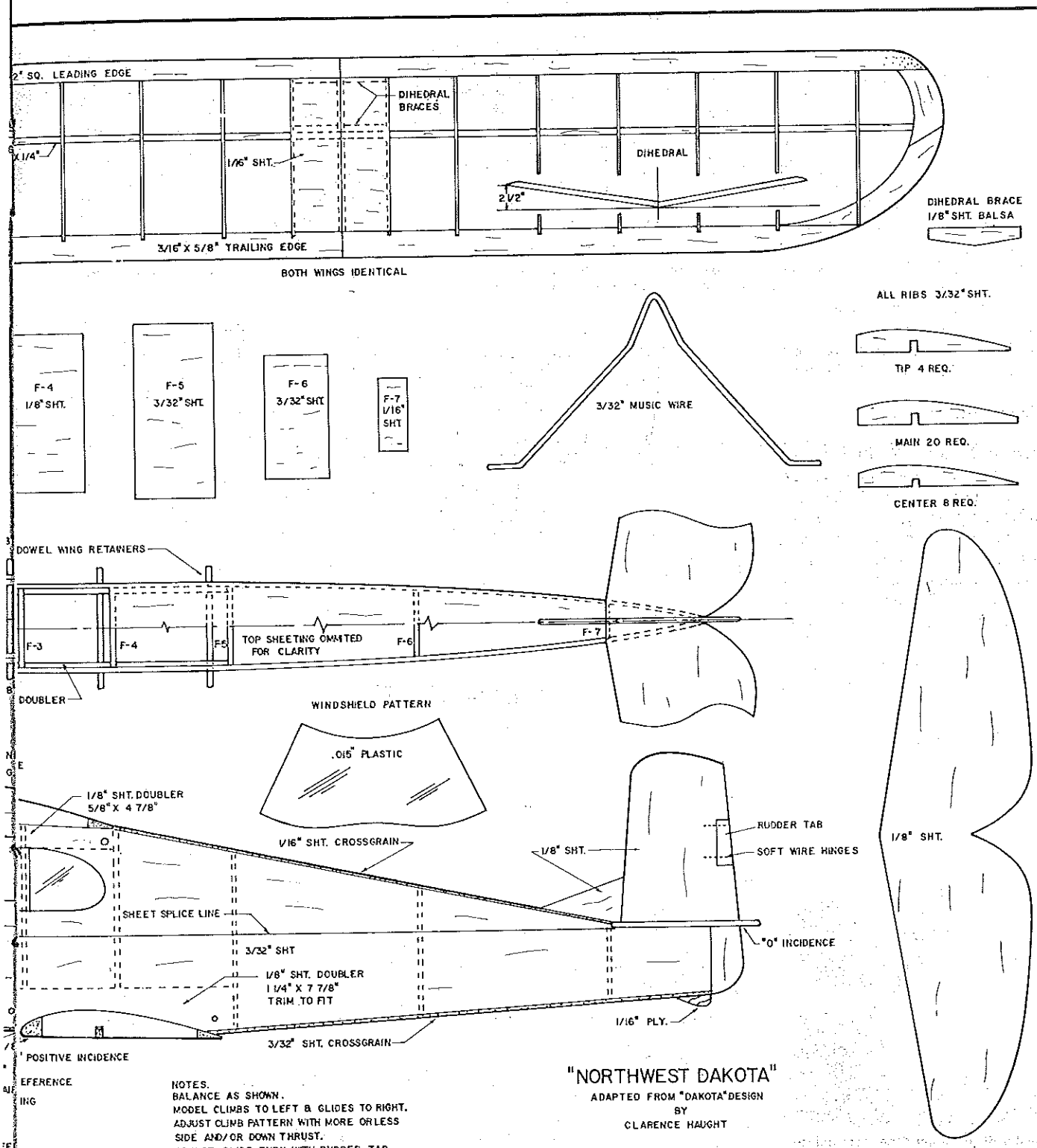
received a phone call from the local golf pro who informed me that my model had landed on a fairway. Whew, had it not been for my name and address on the model, it would have been lost to me forever. The distance flown was about three miles!

The possibility of loss is greatly reduced by keeping the engine runs short and building the model on the heavy side. Of course, the best way to control the engine run is by the use of a shut-off timer. However, timers are expensive and complicate the launch procedure for beginners. I recommend, as an alternative, one of the following. Use an eyedropper tank as shown in the photos. Drill a hole in the side of the fuel tank so it may only be filled partially full. Use a calibrated syringe to measure fuel (one of the disposable plastic type without needle as sold in drug stores works great).

Construction begins with the wings since they are needed to prepare the wing saddles on the fuselage. Wood selection for this model is not critical, but I would suggest staying with medium weight stock. Use your lightest wood for tail components and your heaviest in the nose and wings.

Cut out required ribs as called out on plan. Remember, this is a biplane so you need twice as many parts as it appears. Cut wing tip sections and join at splice lines. Notch trailing edges for ribs. This is easily done by taping two hacksaw blades togeth-

Continued on page 111



NOTES.
BALANCE AS SHOWN.
MODEL CLIMBS TO LEFT & GLIDES TO RIGHT.
ADJUST CLIMB PATTERN WITH MORE OR LESS SIDE AND/OR DOWN THRUST.
ADJUST GLIDE TURN WITH RUDDER TAB.
ADJUST GLIDE ANGLE WITH NOSE OR TAIL WEIGHT.
LIMIT ENGINE RUN BY MEASURING FUEL OR WITH TIMER.

"NORTHWEST DAKOTA"

ADAPTED FROM "DAKOTA" DESIGN
BY
CLARENCE HAUGHT

FULL-SIZE PLANS AVAILABLE . . . SEE PAGE 120

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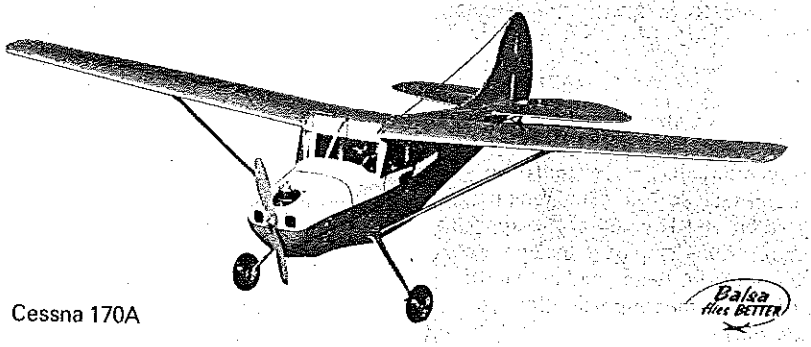
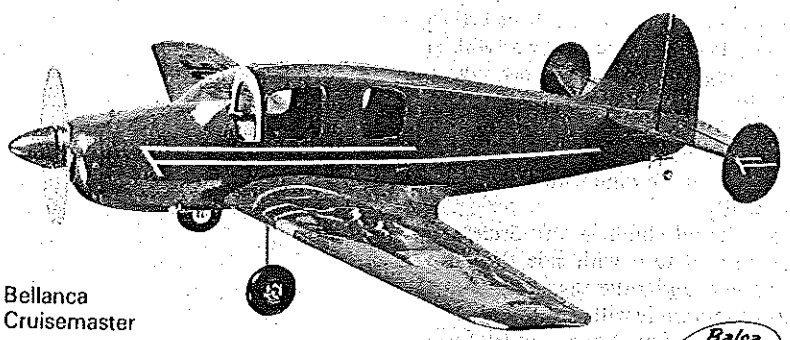


Cessna 170A

Balsa flies BETTER



Bellanca Cruisemaster

Balsa flies BETTER

PAUL K. GUILLOW, Inc., Wakefield, Ma 01880, U.S.A.

Designed by Sam Blumberg

KIT No. 1501

CESSNA 170A

A beautiful scale model especially designed for the R/C beginner and still be of interest to the advanced modeler. Very stable in flight at all speeds, it quickly compensates for most beginner flying errors when the controls are returned to neutral. Vacuum formed cowl and pre-shaped one piece spring aluminum landing gear — hardwood or plywood used at all stress areas.

TECHNICAL DATA: Scale: 1¼" = 1'-0" • Wing span: 45" (114.3 cm) • Wing area: 270 sq. in. • Length: 32 in. (81.28 cm) • Wing loading: 12 oz. per sq. ft. • Weight: 24 oz. with R/C equipment • Engine: .049–.051.

KIT No. 1502

Bellanca Cruisemaster

A different low-wing scale model than offered by other kit manufacturers. Like the Cessna 170, it has a "forgiving" nature valuable to novice flyers. It will also satisfy the average R/C "pro" with its smooth flight and handling characteristics. Kit contents include vacuum formed cowl and windshield plus hardwood and plywood to beef up construction where required.

TECHNICAL DATA: Scale: 1¼" = 1'-0" • Wing span: 42¾" (108.59 cm) • Wing area: 252 sq. in. • Length: 28¾" (73.03 cm) • Wing loading: 12½ oz. per sq. ft. • Weight: 24 oz. with R/C equipment • Engine: .049 to .051.

$30.00 each

(Kits do not contain motors, wheels and R/C equipment)

Both models built the easy Guillow way — clear concise planwork — profusely illustrated building and assembly instructions — no frustrating guesswork.

See your local Hobby Dealer for Guillow kits — check Yellow Pages under "HOBBIES." Send 25c for complete kit listing.

Officials. There will be Race Directors for the entire race, plus a Contest Director accompanying each pilot vehicle for each leg. The CD's will make sure the general intent of the race and all rules are followed, also that the pilot vehicle does not exceed 55 mph or the posted speed limit at any time—teams will be penalized by the addition of a time factor for each offense. In the event of damage to the aircraft, the CD will be the judge as to whether it is in safe, flyable condition. The CD will also insure that the pilot flies the plane in a safe manner and doesn't do anything that could endanger people or property, such as flying low over roads and landing on the freeway or median areas.

CD's may be changed from one team to another at any time during the leg. All CD's desiring to participate in the race should submit their applications to the AMA headquarters at the same time as the race applicants.

Radio Equipment. Any legal make or brand of radio operating on assigned RC frequencies may be used, including "hams" operating on the amateur band, but frequencies in the 27 MHz band will not be assigned to any teams because of the danger of interference from the CB radios along the way. Large capacity batteries, extra battery packs, and/or quick chargers may be used.

Dates. The period for the race is September 1979, beginning on Labor Day weekend. This allows time for advance planning, publicity, coordination with all participants and the police and officials along the way. It also gives plenty of time for the entrants to work on planes and practice. It is also one of the best times weatherwise.

Tips and Suggestions. Six pages of helpful hints, also questions and answers covering more details of the race, are available from AMA HQ, 815 15th St., NW, Washington, DC 20005. Write or call (202) 347-2751 to get this extra information, plus your CD or contestant (pilot or team member) entry form. Remember: you don't pay the entry fee unless you are selected early next year.

Dakota/Haught

continued from page 55

er making a cutting tool the thickness of the ribs and sawing the notches to the proper depth. This step should not be omitted as considerable strength will be lost in doing so.

Cover plan with clear plastic or wax paper and pin leading and trailing edges in place. Fit wing tips and glue to leading and trailing edges. Place spar in proper location and install wing ribs, being careful to use proper size ribs in center section. Do not install the exact center rib at this time. Build two identical wings. When dry, remove wings from plan and sand leading edges and tips to proper shape. Touch up entire wing with sandpaper, blending everything into a smooth surface. Cut wings in two at center and bevel the edges of the leading and trailing edges for a proper fit for joining at dihedral angle. This is best accomplished with a sanding block. Pin one half of wing to bench and block up other tip until it is 5 inches above the bench and glue securely. Precoating the ends to be joined with glue, and allowing to dry before final joining will increase the strength of the joint considerably and is highly recommended. Install 1/8" balsa dihedral braces and cut center rib into sections and glue in place. Complete wing assembly by planking center section and final touch up sanding.

Cut 3/32 × 3" stock to rough shape of fuselage sides and join upper and lower portions at indicated sheet splice line. Trim to final shape and install wing mount doublers. These are cut to dimensions shown and glued to fuselage sides before final shaping. Use completed wing as a pattern for shaping lower wing mount. Be sure lower wing has 1/8" positive incidence and upper wing has 5/16" positive incidence in relation to forward fuselage bottom which serves as a base line. Stabilizer mounting surface should be at 0 incidence. Be sure to make one right and one left fuselage

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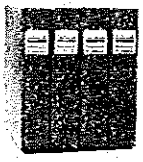

side. Cut and install nose doublers, taking note that the left side doubler is longer than the right to establish the required 3/32" left thrust. Also be sure the 1/8" down thrust is built into the doublers. Drill holes for wing retaining dowels while you can still stack the fuselage sides together to insure alignment.

Cut out all formers. F-1 and F-2 are plywood, the balance are balsa. F-3 is similar to F-2, only shorter. Bend landing gear wire and attach to F-2 with "J" bolts or metal clips.

Join fuselage sides using F-1, F-2, F-3, and F-4. Lay fuselage upside down, on wing mount, on building board and check alignment carefully before glue sets. Cardboard triangles are helpful in checking alignment. When dry, pull fuselage sides together at tailpost and install remaining formers. Sheet bottom with 3/32" balsa cross grain and sheet top with 1/16" balsa cross grain. Sand edges to fit fuselage sides. Carve nose block and upper windshield block from soft balsa and glue in place. Add fill-in strips to F-2 and F-3 in window cut outs. Sand completed fuselage smooth. Install landing gear fairings using light cloth as an aid to bonding and a reinforcement. Tail skid is cut from plywood and glued to fuselage bottom.

Tail surfaces are cut from light to medium light sheet. Sand to shape and install on fuselage, making sure stabilizer is level and rudder is straight. The small rudder tab is helpful in trimming. It should be hinged with soft wire.

The model may be finished using your favorite iron-on covering if you wish. I prefer the more traditional finishing methods. After brushing two coats of clear butyrate dope to the structure, with light sanding between coats to remove raised grain, the wings were covered with SGM Silkspan and the sheet portions of the model with Japanese tissue. The covering of wood parts with Japanese tissue is quite easy and is done in sections by laying the dry tissue over the previously doped and dry surface and adhering by brushing a mixture of 25% dope and 75% thinner directly through the tissue.

The strength of the balsa is increased considerably by the application of tissue, particularly its resistance to abrasion and splitting. Trim is easily applied by cutting patterns from colored Japanese tissue and applied in the same manner as described for covering sheeted areas.

After applying adequate dope to produce a luster to the surface, complete model by adding wing retaining dowels, wheels, windows, and windshield. Install engine with number-two sheet-metal screws and check for balance. Add ballast to attain center of gravity as shown, or slightly nose heavy. Don't try to fly a tail-heavy model.

Check wings and tail surfaces for warps. Any warps can be easily removed by holding the warped surface over a steaming pan of boiling water and twisting in the opposite direction. Keep opposite tension on surface, remove from steam, and hold until cool. A little experimenting will allow you to eliminate warps.

Flight testing begins with limited engine runs as mentioned earlier. Use full power because any tests with reduced power will have to be repeated anyhow. Use enough wing bands to hold the wings firmly in place but not so tight as to prevent their shifting in the event of a crash. Launch slightly to the left of the wind with the nose level or up slightly.

The model should climb in left circles. Control the rate of turn with side thrust by adding washers under the engine mount lugs. Control climb angle with down thrust, more or less as needed. Force model to climb to left. The glide direction may be either right or left, but not straight! Rudder tab may be used to control glide turn. Some modelers prefer to climb left against right rudder tab and control right glide turn with tab. Glide angle is controlled by adding tail weight if too fast, and nose weight if too slow or to eliminate stalling. The model doesn't have a high performance glide and most of the flight will be under power, so effort should be expended to obtain a gentle climb pattern. This will allow long power flights without gaining excessive altitude.

The Northwest Dakota is great to keep the kids busy while you are trimming up your latest competition bird or boring holes in the sky with your RC ship. It's even fun to fly yourself. Be sure to put your name and address on it!

FF Sport/Scale/Warner

continued from page 58

many superb flights from those of Jack Moses' Jumbo Boulton-Paul Defiant (which cleaned up the event for biggies) to Dennis Norman's SK-3 which bested a field of 32 hot Peanuts (and prompted the suggestion that bonus points be no longer awarded to racers!). Pat Daily (Fiat G-50) and Mike Midkiff (Hellcat), first and second respectively in the WW II Combat event, also courted Hung's favor with a duel in the sun in Two-Minute category! Don Srull, who proved himself time and time again, winning both AMA Rubber Scale with his Waterman Racer, FAC Rubber Scale with his HE-100 Heinkel, and "No-Cal" (profile) Scale, was bested in the Embryo Endurance event by 7-year-old Walt Eggert Jr. who nudged him out of second spot, proving that Hung has a well-developed sense of humor. Don, incidentally, was crowned FAC National Champion, which helped assuage his feelings!

In other close action, Dennis Norman of the CFFS bested 28 other Embryos, Bill Henn took both first *and* second in the Shell Speed Dash with a Mr. Smoothie and a Chambermaid, Joe Whiting took the Thompson Trophy flying his Caudron, Mick Nallen outlasted the Unlimiteds with his Druine Turbulent, Peanut WW II combatants dropped from the sky before Gordon Roberts' P-51, and the Power Scale event saw Pat Daily's Sopwith Tabloid edge out Fernando Ramos CO2 A.B.C. Robin.

Spectators and contestants alike cheered heroic efforts such as Dennis Norman's twin-engine Tigercat and Von Rottensocks (A.K.A. Ralph Kuenz) A-26 twin-engined rubber ships. Tom Nallen's Miles M-39 canard Libellula vied with John Stott's Mauboussin, Ed Heyn's Sikorsky SZ quad and Srull's Schweizer-Schlepp Swiss target tug for the "most unusual" honors.

Now, if Hung is the modeler's friend, who is responsible for the evil which befalls models? According to the Flying Aces, it's a mischievous simian who sometimes takes the shape of a tightly-wound ball of broken rubber rampaging in the tail of a hapless model, or at other times may inexplicably bat a plane out of the air or do other nasties. He's aptly named the "Hungorilla," and was definitely in evidence taking care of Chuck Schobloher's Jumbo Spitfire in an agonizing crash. The Hungorilla even piloted a WW I Albatross for Jim Daily, taking Joe Whiting's DH-4 out of the action by ramming him and then returning unbowed to his Staffel as Joe spiralled down. John Stott can attest to the Hungorilla's ferocity when his rear motor peg was snapped by the aforesaid creature during his fly-off winding against Joe Whiting's Caudron, giving Joe the heat by forfeit! Ouch!

At the banquet following the Saturday flying, the intrepid birdmen made merry, exchanged lies, listened to the venerable Bill Brown (of Brown Jr. and Campus CO2 fame) reminisce about the Golden Age of the "gasoleers" in the '30's, and watched films of some vintage FAC meets.

About the only thing missing from this epic meet was "Lt. General" Dave Stott of G.H.Q., the heart, soul, and sparkplug of the FAC phenomenon, who stayed home due to his wife's illness. Bob Thompson, co-editor of the *Flying Aces Club News* along with Dave filled in and summed up the FAC philosophy for all present, "We are here for one reason, to have fun, fun, fun...!" Although there are no plans to have another FAC Nats at this time, we can only hope that it will happen in one form or another sooner than later. Helmets off to the FAC, the guys